

Handling Heavenly Jewels - 35 Years of Antarctic Meteorite Processing at Johnson Space Center.

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Introduction: The ANSMET program began in 1976, and since that time more than 18,000 meteorites have been processed in the Meteorite Processing Lab at Johnson Space Center in Houston, TX[1]. The meteorites are collected and returned to JSC on a freezer truck and remain frozen until they are initially processed.

Initial Processing of Meteorites: Initial processing involves drying the meteorites in a nitrogen glove box for 24 to 48 hours, photographing, measuring, weighing and writing a description of the interior and exterior. The meteorite is broken and a representative sample is sent to the Smithsonian Institution for classification.

Newsletter & Requests: Once initial processing has been complete and the meteorites have been classified, the information is published in the Antarctic Meteorite Newsletter[2,3]. The newsletter is published twice yearly and is sent electronically to researchers around the world and is also available on line. Researchers are asked to fill out a request form and submit it to the Meteorite Working Group secretary. All sample requests will be reviewed by either the meteorite curator or the Meteorite Working Group depending on the type of meteorite and the research being conducted.

Processing for Sample Requests: In the meteorite processing lab, meteorite samples are prepared several different ways. Most samples are prepared as chips obtained by use of stainless steel chisels in a chipping bowl or rock splitter. In special situations where a researcher needs a slab the meteorite samples can be bandsawed in a dry nitrogen glove box with a diamond blade, no liquids are ever introduced into the cabinet. The last type of sample preparation is thin/thick sections. The meteorite thin section lab at JSC can prepare standard 30-micron thin sections, thick sections of variable thickness (100 to 200 microns), or demountable sections using superglue.

Information for researchers: It is important that researchers fill the sample request form completely, in order to make sure the meteorite is processed correctly[4]. Researchers should list any special requirements on the form, i.e. packaging of samples (poly vs. stainless), thick sections and thickness needed, superglue needed, interior chips, exterior chips, fusion crust, contamination issues, all concerns should be listed so processing can be done accurately and any concerns the researcher has can be addressed before the meteorites are broken.

References:

- [1] <http://curator.jsc.nasa.gov/antmet/index.cfm>
- [2] <http://curator.jsc.nasa.gov/antmet/classdb.cfm>
- [3] <http://curator.jsc.nasa.gov/antmet/amn/amn.cfm>
- [4] <http://curator.jsc.nasa.gov/antmet/requestdates.cfm>